**U Substitution: running the chain rule backwards**

**Find the indefinite integral. Not all need u substitution.**

1. 2. 3.

4. 5. 6.

7. 8. 9.

10. 11. 12.

13. 14. 15.

**Find each definite integral either by changing the bounds early or removing bounds temporarily. Some may not need U substitution.**

1. 2. 3.

4. 5. 6.

7. 8. 9.

10. Normally, rainfall for Fort Gibson can be approximated by the following model where R is the amount of rainfall in inches per month for any integer time (t) measured in months. t = 1 corresponds to January.

1. Use integration to approximate the normal annual rainfall. Hint: integrate on .
2. Approximate the average rainfall for the fall of last year.

**Writing:** Using at least 200 of your own words, compare and contrast the different methods for definite integration with U substitution.